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10/729,057	12/05/2003	Junichi Aoki	JP920020197US1	9206

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Intellectual Property Law Dept.  
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EXAMINER
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FRINK, JOHN MOORE

ART UNIT	PAPER NUMBER
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2142

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09/27/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/729,057	<b>Applicant(s)</b> AOKI ET AL.	
	<b>Examiner</b> John M. Frink	<b>Art Unit</b> 2142	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☒ Claim(s) 1-43 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413) .<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                         |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/22/2004</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Specification*

1. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

2. A substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b) is required. The substitute specification filed must be accompanied by a statement that it contains no new matter.
3. In order to perform a complete examination, the Examiner has endeavored to interpret the specification as it would be seen by one of ordinary skill in the art at the time of the invention.
4. The specification contains grammatical and improper English through its entirety. Some examples of problematic phrasing are given below, but the problems in the

specification are not limited to these examples. All the below examples are grammatically incorrect and unclear. However, the entire specification, in addition to the below examples, should be analyzed and corrected.

- a. Background of the Invention, [0002], states 'in order to curb *increase* in loads and notifies each *user* of a predetermined message *by using an agent*.'
- b. [0003] states 'And if the messages processing server *receives x1 such as fluctuations* . . . it identifies the member *whose cause is the x1*. . .
- c. [0004] refers to both patent document 1 and non-patent document 1, which is unclear. Further, [0004] states that, regarding patent document 1 and non-patent document 1, 'neither pre-register with the subscription table the condition for giving a notice . . . *this time as to the x1 from the subscription table and deliver mail to the member*.'
- d. [0005] states 'The following need is also expected *as to the mail delivery server*. To be more specific, in the case *where different x1s arise closely time-wise and the notice mail relating to each of the different x1s* . . . *it is desired to assign a priority to each of the notice mail so as to send the message in order of priority*.' This sentence arrangement is non-standard improper English.  
Furthermore, such style persists through the Specification **in its entirety, and the specification in its entirety should be analyzed by Applicant and corrected.**
- e. [0008] states 'Thus, an aspect of the present invention is to reduce work time in a message processing apparatus . . and a message processing program

for, as to the message applied to a process requester corresponding to an agent start cause event, causing a corresponding agent to perform a predetermined process.' This entire paragraph is written in non-standard, improper English (with such errors repeating through the entirety of the specification). Furthermore, the phrase 'agent start cause event' is non-standard and improper English, and appears repeatedly throughout the specification.

f. [0010] states that 'A further aspect of the present invention is to provide the . . . program for ensuring that, while realizing the processing with the multi-thread, the messages . . . ' and continues with a further reference to the above mentioned 'agent start cause event'.

g. [0011] states that 'The message processing apparatus . . has . . list information creation means for, based on the above described process requestor search information, creating list information on process requesters to which a message generated due to the above described agent start cause event is applied' which is non-standard, improper English.

h. [0085] states 'the process requester search information management means for managing the process requestor search information for searching for the applicable process requestor as to the agent start cause event', another example of the repeated and consistent use of non-standard and improper English.

i. [0115] states 'Agent control means 73 controls the process by the agent 23 as to the message generated due to the determined agent start cause event

*determined as "yes" by the determination means 72. The agent control means 73 allows the process by the agent 23 as to the message generated due to the determined agent start cause event determined as "no" by the determination means 72.'*, which is non-standard improper English.

j. [0116] states 'FIG. 9 *are designed* to continuously process the plurality of continuous messages in the case of processing the message queue 39 in which the messages generated due to a plurality of *agent start cause events* of which *determination result by the determination means 72 is "no" continue* in an *acceptance order direction*.' , which is non-standard improper English.

k. [0180] states 'It is possible, by this reading, to swap in a plurality of agents at a very high speed compared to the case where one SQL *search for the sake of the Swap In of one agent is repeatedly performed a plurality of times*.' , which is non-standard improper English.

l. [0181] states 'When the SwapInCollection delivery mechanism is in operation, it is ensured that the agent related to the message queue having the delivery message inserted therein is read into the cache memory so that the scheduler does not need to read the agent *to be started from the persistent area to the agent cache saved*.' , which is non-standard improper English.

m. [0197] states 'The estimated value of the time required in the KeyOnly delivery mechanism, after receiving the message, to obtain the list of key information on the *agents to which it should be delivered and put the message in the message queues of all the agents corresponding to the obtained key*

*information* (hereafter, referred to as "T.sub.k")', which is non-standard improper English.

n. [0229] states 'FIG. 21 shows a data structure of the control block. A first subject table 230 *has correspondence of the agent key (AgentKey) to the control block (ControlBlock) which is 1:1 recorded therein.*', which is non-standard improper English.

### ***Drawings***

5. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the shading in Figs. 19, 20, 21, 23, 24 and 25 makes the text contained within the shaded figures illegible. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### ***Claim Objections***

6. Claims 1 – 43 are objected to because of the following informalities: The claims appear to be a direct translation from a foreign priority document and are phrased in non-standard, awkwardly structured and overly verbose sentences. Appropriate correction is required.

7. Claim 31 objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim is required to refer back in the alternative only. See MPEP § 608.01(n). Accordingly, claim 31 not been further treated on the merits.

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1, 3, 5, 6, 8 -15 and 16, 18, 20, 21 and 23 – 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

In order to perform a complete examination, the Examiner has endeavored to interpret the claims as they would be seen by one of ordinary skill in the art at the time of the invention.

10. Regarding claims 1 and 16:

o. An 'agent start cause event'

p. 'agents . . . readable from the persistent storage to a cache memory as a *program execution area . . .*'

q. 'selecting a plurality of *unselected ones as the process requestors to be inserted and read. . .*'



r. 'in the case *where the unselected one remains among the process requestors . . . waiting for termination of the process of all the agents in operation . . .*'

11. Regarding claims 3 and 18:

s. ' . . . *as to an agent start cause event;*'

t. 'selecting a plurality of *unselected ones as the process requestors to be inserted and read. . .*'

u. 'in the case *where the unselected one remains among the process requestors . . . waiting for termination of the process of all the agents in operation . . .*'

12. Regarding claims 5 and 20:

v. ' . . . *process requestors to which the message generated due to the agent start cause event of this time is applied, estimated hit rate in the cache memory as to the agents related to the process requestors to which the message generated due to the agent start cause event of this time is applied*

w. ' . . . *estimated time from determination of use as to the agent in cache . . .*'

x. ' . . . *estimated time from determination of use as to the agent outside the cache . . .*'

13. Regarding claims 6 and 21:

y. 'search information for searching for an applicable process requestor *as to an agent start case event . . .*'

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z. *' . . . process requestors to which the message generated due to the agent start cause event of this time is applied. . . '*

14. Regarding claims 8 and 23:

aa. *'value related to emergency of processing of the message.'*

15. Regarding claims 9 and 24:

bb. *'value related to rating of processing of the process requestors.'*

16. Regarding claims 10 and 25:

cc. *'related to the agent which once started the process . . . '*

dd. *'messages of which compound process priority is within a predetermined position in descending rank.'*

17. Regarding claims 11 and 26:

ee. *'grouping the agents and managing grouping information based on determination results of the existence detection means . . . '*

18. Regarding claims 12 and 27:

ff. *'requestor as to an agent start cause event . . . '*

gg. *'proceeding information management means for managing processing information on the process by the thread as to each agent start cause event accepted. . . '*

hh. *'determination means . . . of which process proceeding information is the information on thread process termination (hereafter, referred to as a "determined agent start cause event")'*

ii. *'there is any agent start cause event of which thread process is unfinished'*

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- jj. *'agent control means for controlling the process by the agent as to the message generated due to the determined agent start cause event determined as "yes" by said determination means'*
19. Regarding claims 13 and 28:
- kk. *'agent control means for allowing the process by the agent as to the message generated due to the determined agent start cause event determined as "no" by said determination means.'*
20. Regarding claims 14 and 29:
- ll. *'in the case where the agent start cause event immediately following the agent start cause event determined as "no" in acceptance order is already determined as "yes," changing the determination result from "yes" to "no."*
21. Regarding claims 15 and 30:
- mm. *'having said agent for, in the case of processing the message queue in which the messages generated due to a plurality of agent start cause events of which determination result by said determination means is "no" continue in an acceptance order direction, continuously processing the plurality of continuous messages.'*

***Claim Rejections - 35 USC § 103***

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. Claims 1, 2, 16, 17 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saran et al. (US 2003/0055668 A1), hereafter Saran, in view of Yamamoto et al. (US 6,898,793 B1), hereafter Yamamoto, and Hyde (Memory Architecture)

24. Regarding claims 1, 16, 32 and 40 Saran shows a message processing apparatus, method, computer program product, and program storage device, having process requestor search information management means for managing process requestor search information for searching for an applicable process requestor as to an agent start cause event ([0000-0010], Figs. 13 and 14);

acceptance means for accepting the agent start cause event ([0000-0010], Figs. 13 and 14);

list information creation means for, based on said process requestor search information, creating list information on process requestors to which a message generated due to said agent start cause event is applied ([0066-0070]);

insertion and reading means for, of the process requesters included in said list information, selecting a plurality of unselected ones as the process requestors to be inserted and read, inserting said message into the message queues related to the process requestors to be inserted ([0099-0109, 0116-0117]);

agent instruction means for instructing the agent related to the message queue having the message inserted therein to operate ([0009-0013, 0052, 0067, 0070, 0091-0093]);

and repetitive instructions ([0102-0103]).

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Saran does not show a plurality of agents associated with the process requesters able to process the message in a message queue corresponding to the agent, nor does Saran show where said repetitive instructions are for in the case where the unselected one remains among the process requestors included in said list information, waiting for termination of the process of all the agents in operation and instructing said insertion and reading means to repeat the process.

Yamamoto shows a plurality of agents associated with the process requesters able to process the message in a message queue corresponding to the agent (col. 7 lines 5 - 38), and shows where said repetitive instructions are for in the case where the unselected one remains among the process requestors included in said list information, waiting for termination of the process of all the agents in operation and instructing said insertion and reading means to repeat the process (col. 2 lines 23 - 57, col. 7 lines 5 - 45, col. 8 lines 25 - 30).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Saran with that of Yamamoto in order to better control the load of agents on an agent server (Yamamoto, Abstract).

Saran in view of Yamamoto do not show where the agents, stored in a persistent storage, are readable from the persistent storage to a cache memory as a program execution area and discardable from the cache memory, each agent operating only when existing in the cache memory.

Hyde shows show where the programs or other items, stored in a persistent storage, are readable from the persistent storage to a cache memory as a program

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execution area and discardable from the cache memory, and operating only when existing in the cache memory (Section 6.3).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Saran in view of Yamamoto with that of Hyde in order to utilize the speed advantages of cache memory compared to slower storage methods (Hyde, 6.3 and 6.4).

25. Regarding claims 2 and 17, Saran in view of Yamamoto and Hyde further show each agent sending a notice to the process requestor associated with the agent as to the message in the message queue associated with the agent (Saran, [0091-0093,0100-0103,0137-0142]).

26. Claims 3, 18, 33, 37 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saran in view of Yamamoto and Hyde as applied to claim 1 above, and further in view of Hunter et al. (US 6,665,699 B1), hereafter Hunter.

Saran in view of Yamamoto and Hyde show a process requester search information management means for managing process requester search information for searching for an applicable process requestor as to an agent start cause event (Saran, [0009-0010], Figs. 13 and 14);

acceptance means for accepting the agent start cause event; list information creation means for, based on said process requestor search information, creating list information on process requestors to which a message generated due to said agent start cause event is applied (Saran, [0009-0010, 0066-0070], Figs. 13 and 14);

a plurality of agents associated with the process requestors (Yamamoto col. 7 lines 5 – 38), stored in a persistent storage, readable from the persistent storage to a cache memory as a program execution area and abandonable from the cache memory, each agent operating only when existing in the cache memory (Hyde, 6.3) to be able to process the message in a message queue corresponding to the agent (Yamamoto col. 7 lines 5 – 38);

insertion and reading means for, of the process requestors included in said list information, selecting a plurality of unselected ones as the process requestors to be inserted and read, inserting said message into the message queues related to the process requestors to be inserted (Saran, [0099-0109, 0116-0117]) and read and reading the agents related to said process requestors from the persistent storage to the cache memory (Hyde, 6.3)

agent instruction means for, as to the agents related to the message queue having the message inserted therein, immediately instructing the agent to operate if the agent is in the cache memory, and reading the agent from said persistent storage to said cache memory and then instructing the agent to operate if the agent is not in the cache memory (Hyde, 6.3)

and repetitive instruction means for, in the case where the unselected one remains among the process requestors included in said list information, waiting for termination of the process of all the agents in operation and instructing said insertion and reading means to repeat the process (Saran, [0102-0103]; Yamamoto, col. 2 lines 23 – 57, col. 7 lines 5 – 45, col. 8 lines 25 - 30); along with

a queue processing mechanism with insertion means for inserting said message into the message queues related to all the process requesters included in said list information (Yamamoto, Figs. 5, 7 and 9, col. 7 lines 5 – 60).

Saran in view of Yamamoto and Hyde do not show a first message queue processing mechanism; a second message queue processing mechanism; selection means for selecting either one of the first and second message queue processing mechanisms.

Hunter shows a first message queue processing mechanism; a second message queue processing mechanism; selection means for selecting either one of the first and second message queue processing mechanisms (col. 4 lines 26 – col. 5 lines 65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Saran in view of Yamamoto and Hyde with that of Hunter in order to allow for increased ability in dealing with a large number of jobs and handling/prioritizing said jobs differently based on the needs of the system and individual jobs (Hunter, Abstract).

27. Claims 4 and 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Saran in view of Yamamoto, Hyde and Hunter as applied to claim 3 above, and further in view of Deosaran et al. (US 2002/0135611 A1), hereafter Deosaran.

Saran in view of Yamamoto, Hyde and Hunter show claim 3.

Saran in view of Yamamoto, Hyde and Hunter do not show where selection of said selection means is based on an instruction of an operator.



Deosaran shows selection of said selection means is based on an instruction of an operator ([0007.0010,0066,0093,0099]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Saran in view of Yamamoto, Hyde and Hunter with that of Deosaran in order to allow increased flexibility and responsiveness in message handling.

28. Claims 5 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saran in view of Yamamoto, Hyde, Hunter, and Deosaran as applied to claim 4 above, and further in view of Cochroft, Jr. et al. (5,317,738), hereafter Cochcroft.

Saran in view of Yamamoto, Hyde, Hunter, and Deosaran show where selection of said selection means is based on the estimated number of the process requesters to which the message generated due to the agent start cause event of this time is applied, estimated hit rate in the cache memory as to the agents related to the process requesters to which the message generated due to the agent start cause event of this time is applied (Desoran, Table 5, [0116-0117]; Saran [0009-0013,0052,0067,0091-0093], Hyde 6.3) as well as estimated work time, in the case where said selection means selects the first message queue processing mechanism, from acceptance of the information by said acceptance means until obtaining the list information on the process requestors to which the message is applied and inserting the message into the message queues of all the agents, estimated work time, in the case where said selection means selects the second message queue processing mechanism, from acceptance of the information by said acceptance means until obtaining the list

information on the process requesters to which the message is applied and inserting the message into the message queues of all the agents (Deosaran, [0007,0010,0066,0093,0099]; Hunter, col. 4 line 26 – col. 5 line 65).

Saran in view of Yamamoto, Hyde, Hunter, and Deosaran also show that cache is faster than other types of storage, and its use thus leads to faster system performance (Hyde, 6.3).

Saran in view of Yamamoto, Hyde, Hunter, and Deosaran do not show estimated time from determination of use as to the agent in the cache memory until completion of the process by the determined agent, and/or estimated time from determination of use as to the agent outside the cache memory until the completion of the process by the determined agent.

Cochcroft shows prioritizing processes which are already contained, at least in part, in cache over processes that are not contained in cache at all (Abstract, col. 1 line 6 – col. 2 line 53).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Saran in view of Yamamoto, Hyde, Hunter, and Deosaran with that of Cochcroft in order to optimize system performance through the more intelligent use of cache.

Saran in view of Yamamoto, Hyde, Hunter, Deosaran and Cochcroft thus show estimated time from determination of use as to the agent in the cache memory until completion of the process by the determined agent, and/or estimated time from

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determination of use as to the agent outside the cache memory until the completion of the process by the determined agent (Hyde, 6.3; Cochcroft, col. 1 line 6 – col. 2 line 53).

29. Claim 6, 21, 28, 34 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saran in view of Yamamoto and Hyde as applied to claim 1 above, and further in view of Hiltgen (US 2004/0216126 A1) and Ransom et al. (6,148,324), hereafter Ransom, further in view of Cochcroft.

Saran in view of Yamamoto and Hyde show process requester search information management means for managing process requestor search information for searching for an applicable process requester as to an agent start cause event, acceptance means for accepting the agent start cause event (Saran, Figs. 13 and 14 [0009-0010]);

a plurality of agents associated with the process requesters (Yamamoto, col. 7 lines 5 – 38), stored in a persistent storage, readable from the persistent storage to a cache memory as a program execution area and abandonable from the cache memory, each agent becoming operable when existing in the cache memory (Hyde, 6.3)

Saran in view of Yamamoto and Hyde do not show process requestor determination means for determining the process requestor to which the message generated due to said agent start cause event is applied based on said process requestor search information.

Hiltgen shows process requestor determination means for determining the process requestor to which the message generated due to said agent start cause event

is applied based on said process requestor search information ([0006,0011-0012, 0040-0047]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Saran in view of Yamamoto and Hyde with that of Hiltgen in order to improve agent execution (Hiltgen, [0010]).

Saran in view of Yamamoto, Hyde and Hiltgen do not show at least one sub-process priority determination means for determining process priority about each message as sub-process priority based on a single standard of value; compound process priority determination means for, when the total number of said sub-process priority determination means is two or more, determining compound process priority about each message based on the sub-process priority individually determined as to each message by each sub-process priority determination means, and when the total number of said sub-process priority determination means is one, determining as the compound process priority the sub-process priority determined by said one sub-process priority determination means as to each message; and agent instruction means for rendering the message of the highest compound process priority among the messages held by each message queue as the message of the highest priority, and between the agents related to the message queues of which compound process priority of the message of the highest priority is the same, instructing the agent existing in the cache memory to operate in preference to the agent not existing therein.

Ransom shows at least one sub-process priority determination means for determining process priority about each message as sub-process priority based on a

single standard of value; compound process priority determination means for, when the total number of said sub-process priority determination means is two or more, determining compound process priority about each message based on the sub-process priority individually determined as to each message by each sub-process priority determination means, and when the total number of said sub-process priority determination means is one, determining as the compound process priority the sub-process priority determined by said one sub-process priority determination means as to each message; and (Abstract, Figs. 1 and 2) agent instruction means for rendering the message of the highest compound process priority among the messages held by each message queue as the message of the highest priority (Abstract, Figs. 1 and 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Saran in view of Yamamoto, Hyde and Hiltgen with that of Ransom better manage CPU usage and task prioritization (Ransom, Abstract).

Saran in view of Yamamoto, Hyde, Hiltgen and Ransom do not show between the agents related to the message queues of which compound process priority of the message of the highest priority is the same, instructing the agent existing in the cache memory to operate in preference to the agent not existing therein.

Cochcroft shows prioritizing processes which are already contained, at least in part, in cache over processes that are not contained in cache at all (Abstract, col. 1 line 6 – col. 2 line 53).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Saran in view of Yamamoto, Hyde, Hunter, and

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Deosaran with that of Cochcroft in order to optimize system performance through the more intelligent use of cache.

Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft thus show between the agents related to the message queues of which compound process priority of the message of the highest priority is the same, instructing the agent existing in the cache memory to operate in preference to the agent not existing therein.

30. Claims 7, 8, 9, 22, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft as applied to claim 6 above, and further in view of Gay (US 2004/0100906 A1).

31. Regarding claims 7 and 22, Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft show claim 6.

Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft do not show where the standard of value may be related to the contents of the message or to the process requesters to which the message is applied.

Gay shows where the standard of value may be related to the contents of the message or to the process requesters to which the message is applied (Abstract, [0016-0022]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft with that of Gay in order to better handle time sensitive data and other prioritized messages.

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32. Regarding claims 8 and 23, Saran in view of Yamamoto, Hyde, Hiltgen, Ransom, Cochcroft and Gay further show where the predetermined standard of value related to the contents of the message includes the standard of value related to emergency of processing of the message (Gay, [0016-0022]).

33. Regarding claims 9 and 24, Saran in view of Yamamoto, Hyde, Hiltgen, Ransom, Cochcroft and Gay further show standard of value related to the process requestors to which the message is applied includes the standard of value related to rating of the process requestors (Gay, [0016-0022], Saran, Abstract, Hunter col. 4 line 26 – col. 5 line 65).

34. Claims 10 and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft as applied to claim 6 above, and further in view of Butterworth (US 6,996,821 B1).

Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft show claim 6.

Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft do not show when there are a plurality of messages held by the message queue related to the agent which once started the process by said agent instruction means, the agent continuously processes all those messages or the messages of which compound process priority is within a predetermined position in descending rank.

Butterworth shows when there are a plurality of messages held by the message queue related to the agent which once started the process by said agent instruction means, the agent continuously processes all those messages or the messages of which

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compound process priority is within a predetermined position in descending rank (col. 3 line 40 – col. 4 line 29).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft with that of Butterworth in order to improve process scheduling and execution (Butterworth, Abstract).

35. Claims 11 and 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft as applied to claim 6 above, and further in view of Don et al. (US 6,633,954 B1), hereafter Don.

Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft show claim 6.

Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft do not show where there is agent management means including said sub-process priority determination means and said compound process priority determination means; said agent management means has existence detection means for detecting whether or not each agent exists in the persistent storage, grouping information management means for grouping the agents and managing grouping information based on determination results of the existence detection means and the compound process priority of each agent, and update instruction means for instructing the grouping information management means to update the grouping information; and said agent instruction means instructs the agents to operate in order based on the grouping information of said agent management means.



Don shows where there is agent management means including said sub-process priority determination means and said compound process priority determination means; said agent management means has existence detection means for detecting whether or not each agent exists in the persistent storage, grouping information management means for grouping the agents and managing grouping information based on determination results of the existence detection means and the compound process priority of each agent, and update instruction means for instructing the grouping information management means to update the grouping information; and said agent instruction means instructs the agents to operate in order based on the grouping information of said agent management means (Abstract, col. 2 lines 12 – 50).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft with that of Don in order to enhance application performance (Don, Abstract).

36. Claims 12 – 15, 27 – 30, 35, 39 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft as applied to claim 11 above, and further in view of Calvignac et al. (US 7,089,555 B2), hereafter Calvignac.

37. Regarding claims 12, 27, 35, 39, and 43 Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft further show process requester search information management means for managing process requestor search information for searching for an applicable process requestor as to an agent start cause event; acceptance

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means for accepting the agent start cause event (Saran [0009-0010], Figs. 13 and 14); acceptance order information management means for managing acceptance order information on the agent start cause events accepted by said acceptance means (Saran, [0102-0103], Hunter col. 4 line 26 – col. 5 line 65) a plurality of agents associated with the process requestors, stored in a persistent storage, readable from the persistent storage to a cache memory as a program execution area and abandonable from the cache memory, each agent operating only when existing in the cache memory to be able to process the message in a message queue corresponding to the agent (Hyde, 6.3; Yamamoto col. 7 line 5 - 38) a plurality of threads mutually operable in parallel, each thread detecting the process requestors to which the message generated due to said agent start cause event is applied (Hiltgen, [0006,0011-0012,0040-0047]) based on said process requestor search information and inserting said message into the message queues related to the process requestors (Saran [0099-0109,0102-0103,0116-0117]), and proceeding information management means for managing proceeding information on the process by the thread as to each agent start cause event accepted by said acceptance means (Hiltgen [0040-0043,0046-0047,0050,0055-0057]).

Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft do not show allocation means for allocating each thread the agent start cause event to be processed by that thread, determination means for, as to the agent start cause event of which process proceeding information is the information on thread process termination (hereafter, referred to as a "determined agent start cause event"), determining whether

or not, of the agent start cause events accepted by said acceptance means prior to the determined agent start cause event, there is any agent start cause event of which thread process is unfinished; and agent control means for controlling the process by the agent as to the message generated due to the determined agent start cause event determined as "yes" by said determination means.

Calvignac shows allocation means for allocating each thread the agent start cause event to be processed by that thread, determination means for, as to the agent start cause event of which process proceeding information is the information on thread process termination (hereafter, referred to as a "determined agent start cause event"), determining whether or not, of the agent start cause events accepted by said acceptance means prior to the determined agent start cause event, there is any agent start cause event of which thread process is unfinished; and agent control means for controlling the process by the agent as to the message generated due to the determined agent start cause event determined as "yes" by said determination means (Abstract, col. 3 lines 10 – 43, col. 4 lines 38 – 67, col. 6 lines 26 – 67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosure of Saran in view of Yamamoto, Hyde, Hiltgen, Ransom and Cochcroft with that of Calvignac in order to ensure proper and orderly executing of agents and their corresponding threads.

38. Regarding claims 13 and 28, Saran in view of Yamamoto, Hyde, Hiltgen, Ransom, Cochcroft and Calvignac further show having said agent control means for allowing the process by the agent as to the message generated due to the determined

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agent start cause event determined as "no" by said determination means (Calvignac, Abstract, col. 3 lines 10 – 43, col. 4 lines 38 – 67, col. 6 lines 26 – 67).

39. Regarding claims 14 and 29, Saran in view of Yamamoto, Hyde, Hiltgen, Ransom, Cochcroft and Calvignac further show having said determination means for, in the case where the agent start cause event immediately following the agent start cause event determined as "no" in acceptance order is already determined as "yes," changing the determination result from "yes" to "no." (Calvignac, Abstract, col. 3 lines 10 – 43, col. 4 lines 38 – 67, col. 6 lines 26 – 67).

40. Regarding claims 15 and 30, Saran in view of Yamamoto, Hyde, Hiltgen, Ransom, Cochcroft and Calvignac further show having said agent for, in the case of processing the message queue in which the messages generated due to a plurality of agent start cause events of which determination result by said determination means is "no" continue in an acceptance order direction, continuously processing the plurality of continuous messages (Calvignac, Abstract, col. 3 lines 10 – 43, col. 4 lines 38 – 67, col. 6 lines 26 – 67).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Frink whose telephone number is (571) 272-9686. The examiner can normally be reached on M-F 7:30AM - 5:00PM EST; off alternate Fridays.

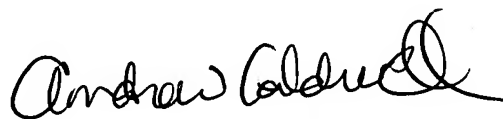
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on (571)272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John Frink

(571) 272-9686

A handwritten signature in black ink, appearing to read "Andrew Caldwell", with a stylized flourish at the end.

ANDREW CALDWELL  
SUPERVISORY PATENT EXAMINER